IDD 9518

FFile 7/19/01

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 10

FACSIMILE TRANSMITTAL FORM

TO: Blaine Edmo, Chairman
Fort Hall Business Council
Shoshone-Bannock Tribes
FAX #: 208-237-0797

FROM: Gil Haselberger
Senior Advisor
EPA Region 10
1200 - 6th Ave, M/S: OAQ-164
Seattle, Washington 98101
PHONE #: 206-553-1094

TOTAL PAGES (incl this sheet): 7
DATE: 7/19/2001

MESSAGE:

Chairman Edmo-

Attached is a 6-page writeup which lists the pros and cons of dredging and treating Pond 18, vs. capping it in place; it also includes a summary of potential health effects of the major hazardous components. As you requested, we have tried to be neutral and not slant the writeup in any particular direction, and we tried to write it in straightforward language. I hope you will find that this information is what you had in mind.

I also want to thank you for the cordial reception you and the Business Council provided. Although some of the questions to us were pretty challenging to answer adequately, I hope that you felt we were trying our best to be honest and open, and to assist the Tribes in this difficult decision. We thought that both the afternoon and evening meetings went well, and that we were able to exchange views and information with mutual respect.

I understand from Susan Hanson that you were hoping that EPA could have a representative present on Saturday. Unfortunately, we will not be able to do that, but it is not because we do not want to be helpful. Of the three of us present last Monday, two have prior commitments that could not be changed, and the third is in Minnesota. At this point, I don't know of anyone else on the staff here that I could send who would be up to speed and able to speak with authority on this matter.

I hope that the information I have attached will in some way help make up for the fact that we will not be there. Please let me know if there is anything else I can provide you.

Sincerely,
Gil Haselberger

P.S.: I also e-mailed this information to you.

636547

FILE COPY

Introduction

The following is intended to provide information comparing the two options for addressing the waste in Pond 18 at the FMC/Astaris facility. Under the terms of the current Consent Decree, the company is required to dredge the materials from the pond beginning in May 2002 and to process the waste in the LDR treatment plant in a manner that will make it non-hazardous. This work is to be completed over a 5-year period. Recently, the company proposed to the Tribes that Pond 18 be capped with the waste in place, rather than be dredged and treated. There are risks and benefits associated with either dredging and treating the waste, or capping the pond, but these are the only two options that are available. Based on EPA's analysis to-date, the Agency believes that either approach can be accomplished in an environmentally responsible and safe manner. EPA is seeking a written declaration from the Fort Hall Business Council on which approach is preferred by the Tribes. EPA has advised the Business Council it is prepared to see the current requirements of the Consent Decree carried out, but that, "if the Tribes should so decide, the Agency would respect the Tribes' decision to cap Pond 18 with the waste in place, and take the necessary measures to amend the RCRA Consent Decree, conditional on EPA's determination that the closure could be done in a way that protected human health and the environment."

The two major sections that follow provide a summary of the pros and cons of each approach, as well as potential health implications. In reading the information on potential health consequences it is important to understand that the risks described and the health consequences are indeed only potential, and that it is not necessarily likely or probable that any of these will actually occur. In fact, a plan to either dredge and treat Pond 18 waste, or to close the pond with waste in place, would be designed and carried out in a way that was intended to minimize the likelihood of adverse consequences to human health or the environment.

Benefits and Risks of Dredging Pond 18

Pros:

Dredging and treating would eliminate potential risks of long-term containment of waste on-site.

Cons:

There would be short-term risks for the duration of dredging activity to workers and individuals off-site from emissions of phosphine and hydrogen cyanide gas; this would occur over an estimated 5-year period.

Overview of Health Risks Associated with Dredging Pond 18

The main chemical risks associated with dredging the ponds in order to prepare them to be fed to the waste treatment plant is inhalation (breathing) of phosphine and cyanide gases. The physical operation of dredging would increase the air concentrations of these gases substantially above what now exists (there are some significant releases of these substances to air now).

Computer modeling indicates that phosphine and cyanide gas levels during dredging would be most highly concentrated around the pond, but would also reach workers at other areas of the facility, and would extend off-site beyond the highway. People located farther away from the facility would be less affected, since air concentrations drop significantly over distance. The modeling predicted that, over the 5-year period of dredging, emissions of phosphine gas would decrease over time, while emissions of cyanide gas would remain about the same over the 5-year period. There are no significant ecological (that is, non-human health) risks associated with these emissions.

Specific Health Effects

1. Inhalation of Phosphine Gas

Acute (short-term) inhalation exposure to high concentrations of phosphine may cause headaches, dizziness, fatigue, burning substernal pain, nausea, vomiting, gastrointestinal distress, cough, labored breathing, pulmonary irritation, pulmonary edema, and tremors in humans.

Chronic (long-term) occupational exposure of workers to moderate concentrations of phosphine may cause inflammation of the nasal cavity and throat, weakness, dizziness, nausea, gastrointestinal, cardiorespiratory, and central nervous system symptoms , jaundice, liver effects, and increased bone density.

There are federal rules which dictate how much phosphine a worker can be exposed to without using respiratory protection. The main hazard is the possibility that acute phosphine

poisoning of workers could occur without it being immediately recognized. This is because neither the smell nor sensory irritation of phosphine can be relied upon for warning of toxic concentrations, especially when other fumes or gases are present. In addition, while phosphine itself does not accumulate in the body, its effects appear to be cumulative; deaths have occurred in humans as a result of repeated daily exposures to concentrations well below acutely injurious concentrations.

For people not exposed occupationally, but rather incidentally, such as those traveling along the highway, neither acute nor chronic effects would be expected to occur. It is highly unlikely that the dredging of Pond 18 would reach residents of homes at concentrations that would cause chronic symptoms or illness.

2. Inhalation of Hydrogen Cyanide Gas

Cyanide affects virtually all body tissues. The acute (short-term) health effects may occur immediately or shortly after exposure to cyanide. Exposure to very high levels can cause sudden death. Lower exposures can cause skin, eye, nose, and throat irritation, weakness, headache, pounding of the heart, nausea, and confusion. Contact with the skin can cause similar effects. Repeated lower exposure to cyanide can cause nose bleed and sores in the nose, and/or enlarged thyroid. The nervous system can be adversely affected at higher exposures.

Like phosphine, occupational exposure to cyanide is regulated by federal rules. Unlike phosphine, cyanide has a faint odor of almonds, so is more readily detected by humans. Safe occupational exposure limits are lower when both phosphine and cyanide are present in the air.

As with phosphine, possible non-workers who could come into contact with cyanide emissions could be people traveling on the highway. These are not expected to constitute either acute or chronic exposures. People with pre-existing respiratory distress or disease may suffer increased symptoms when exposed to irritants such as cyanide. It is considered highly unlikely that people at residences would encounter exposures that would cause adverse effects.

Pond Management Plan Requirements

The Pond Management Plan (PMP), which is part of the RCRA Consent Decree, includes pond monitoring requirements that would apply to dredging activities. FMC and Astaris must test the air around the ponds and at the facility fence line for phosphine and hydrogen cyanide, including during dredging activities. If the concentrations of these gases in the air exceed worker limits specified in the PMP, workers must be evacuated or provided with respirators. The PMP also requires FMC and Astaris to test the air at the plant fence line near the ponds every four hours and at any time worker limits at the ponds are exceeded. If concentrations at the fence line exceed specified limits based on acute exposure guidelines, the companies must conduct monitoring at nearby specified points off-site and evacuate anyone in those areas if concentrations exceed the specified acute exposure guideline limits.

EPA staff, Tribal technical staff, and Astaris have begun discussions on revising the PMP to ensure that dredging procedures and monitoring during dredging are protective. In response to Tribal and EPA concerns, Astaris has proposed that, should an off-site exceedance of phosphine or hydrogen cyanide limits occur, the dredging will be stopped and not be resumed until off-site monitoring confirms that gas levels are below threshold limits and dredging/weather conditions appear favorable. EPA and Tribal technical staff will consider that proposal and evaluate the need for additional monitoring and dredging requirements should the decision be made to dredge Pond 18.

Benefits and Risks of Capping Pond 18

Pros:

Capping would eliminate the short-term (5 years) risks of dredging activities, which are primarily the risks associated with phosphine and hydrogen cyanide gas emissions.

Cons:

1. There is the potential that contaminants in the capped waste materials could leach into groundwater, discharge from the groundwater into the surface water, and then potentially reach humans and/or ecological receptors. Contaminants of concern for leaching include:
   - cadmium, arsenic, fluoride and cyanide (of human health concern)
   - cadmium, arsenic, cyanide, zinc, chromium, and phosphorus (of ecological concern)

   The pond post-closure plan requirements would include groundwater monitoring for these contaminants.

2. There is the potential that phosphorus and cyanide in the capped waste materials could generate gases due to contact with water. (The cap system would include a gas monitoring and collection system to address this potential.)

Overview of Health Effects Associated with Capping Pond 18

If Pond 18 is capped with its wastes left in place, there is the potential for some of the hazardous constituents associated with the wastes to migrate to groundwater. De-watering of the pond before capping would reduce the potential for contaminant migration, but it would still exist. Following is a description of some risks and hazards that can be associated with pond-related hazardous constituents if they reach groundwater. This discussion assumes that contamination would travel through the groundwater and, at some point or points, the groundwater would be tapped for drinking water. It is extremely unlikely that very high acute (short-term) exposures would be encountered in groundwater; therefore, this discussion is limited to possible chronic (long -term) effects from drinking contaminated groundwater. It is also important to note that EPA would take action to prohibit the use of groundwater contaminated by the site if the water did not meet drinking water standards, and that this prohibition would continue until the ground water meets those standards either naturally of because of clean up activities.

Specific Health and Environmental Effects

1. Drinking of Groundwater Contaminated with:

   Cadmium

   Cadmium is not believed to cause cancer by eating or drinking it, although it does by inhalation. It has other toxic effects when ingested, however, including the following:
   - It is likely to be a reproductive hazard, since it may damage the testes in males and may disrupt female reproductive cycles.

- Repeated low exposures can cause permanent kidney damage which can lead to kidney stones.
- Long term exposure can cause anemia, loss of sense of smell, fatigue, and/or yellow staining of teeth.

Arsenic

Arsenic is a known human cancer-causing chemical. Increased deaths from multiple internal organ cancers (liver, kidney, lung, and bladder) and an increased incidence of skin cancer have been observed in populations consuming drinking water high in inorganic arsenic. Arsenic also has toxic effects which are not related to cancer:

- High or repeated exposure can damage the nerves.
- Repeated exposure can damage the liver and cause stomach problems.

Fluoride

Fluoride is not known to cause cancer. Repeated high exposures can cause deposits of fluorides in bones and teeth. This may cause pain, disability, and mottling of the teeth. (These effects do not occur at the level of fluorides used to treat water for preventing cavities in teeth.)

Cyanide

Cyanide in drinking water can cause adverse effects on the body's ability to metabolize protein. However, its most severe effects come from inhalation of cyanide from the drinking water. (These effects are described in the section on Pond 18 emissions.) Cyanide is very soluble in groundwater and would be expected to migrate rapidly downstream.

2. Contaminated Surface Water

A number of the chemicals associated with Pond 18 waste are detrimental to organisms living in surface water. Cadmium, arsenic, zinc, cyanide and chromium are all chemicals which are considered to be "Priority Toxic Pollutants" for which federal Water Quality Criteria have been established to protect aquatic organisms. In addition, phosphorus compounds in the surface water may damage the ecology of the surface water by encouraging growth of nuisance organisms, which compete with the healthy growth of natural species.

Astaris pond to be capped - $40 million accepted to seal waste facility

07/26/01
By Emily Jones - Journal Writer

FORT HALL — FMC Corp. and the Shoshone-Bannock Tribes have agreed to cap a waste pond at the Astaris phosphorus plant on the reservation rather than clean it up.

At a called meeting Saturday, tribal members voted to accept $40 million in exchange for FMC capping the pond. If the agreement is ratified, the tribes will be given a lump payment of $30 million, then $2 million each year for five years.

The agreement must be ratified by the Tribal Business Council. Council Chairman Blaine Edmo had no comment on the matter Tuesday, but may issue a press release in the next few weeks.

"It's sort of a private matter," he said.

As part of a 1998 legal decree with the Environmental Protection Agency, FMC Corp. is required to treat the pond according to the Resource Conservation Recovery Act. The pond, approximately 16 acres in size, contains waste resulting from processing phosphate ore to make elemental phosphorus.

A Land Disposal Restrictions Facility is under construction that will be able to treat the waste. EPA senior advisor Gil Haselberger said that the decree can be amended, and that they have said they will respect the wishes of the tribe as long as the plan is environmentally sound. Haselberger said tribal officials, the EPA and FMC have been discussing the matter for a few months.

"What we decided is, if the tribes decide to cap the pond rather than dredge it up and treat it, we will do whatever we can to support the tribe's decision," he said.

Astaris spokesman Arlen Wittrock refused to comment on whether FMC approached the tribes with an offer, but confirmed that an agreement had been made.

Haselberger said there were possible hazards both with capping the waste and with treating it, but both options were manageable. To cap the pond, FMC workers will remove the water and seal it with layers of clay and synthetic materials. The ponds will be monitored for leaks, and Haselberger said the pond liner is strong, but the actual lifespan of the liner is uncertain. There are other ponds at the plant which have been capped.

"Nobody has been capping ponds long enough to know what the lifetime is, but we know it's not infinite," he said. Most liners, he said, are guaranteed for as long as 25 years. "We don't expect these materials to move into the groundwater."

Some residents, like tribal member Linda Broncho, worry if the pond leaks, the tribes will be responsible. Haselberger said FMC will continue to be held liable for the ponds, regardless of any agreement.

"I think we're going to be liable in the end," Broncho said. "I hope the companies take responsibility."

Broncho said she disagreed with the tribes' decision, but that she was encouraged tribal business council called a meeting to discuss the agreement, rather than making a decision without consulting constituents.

"I'm glad they called the meeting to listen to the people," she said. "Our former council never listened. At least they're listening."

Emily Jones covers Bingham County, science and the environment for the Journal. She can be reached at 239-3175 or by e-mail at ejones@journalnet.com.